WHAT IS CLAIMED IS:

1. A method for fabricating a semiconductor device, comprising the steps of:

providing a substrate containing a first layer comprising GaAs and a second layer comprising InGaP, wherein the first and second layers are joined across a common interface comprising InGaAsP;

etching the first layer with a first liquid composition until at least a portion of the interface is exposed; and

etching the interface with a second composition that exhibits etch stop behavior with respect to InGaP, the second composition comprising an oxidizing agent disposed in a liquid medium.

2. The method of claim 1, wherein the semiconductor device is a field effect transistor.

3. The method of claim 1, wherein the semiconductor device is a heterojunction bipolar transistor.

4. The method of claim 1, wherein the second composition is as aqueous solution comprising HCl and H_2O_2.

5. The method of claim 4, wherein the second composition is a dilute aqueous solution.

6. The method of claim 4, wherein the mole ratio of H_2O_2 to HCl in the solution is within the range of about 1:20 to about 5:4.

7. The method of claim 4, wherein the mole ratio of H_2O_2 to HCl in the solution is within the range of about 1:12 to about 3:4.

8. The method of claim 4, wherein the mole ratio of H_2O_2 to HCl in the solution is within the range of about 1:12 to about 1:4.

9. The method of claim 1, wherein the InGaAsP has the formula $In_xGa_{1-x}As_yP_{1-y}$, wherein $0 < x, y < 1$.

10. The method of claim 1, wherein the InGaP has the formula $In_xGa_{(1-x)}P$, where $0 < x < 1$.

11. The method of claim 1, wherein the liquid medium is water.

12. The method of claim 1, wherein the first composition exhibits etch stop behavior with respect to InGaP.

13. The method of claim 1, wherein the first and second layers are epitaxial layers.

14. The method of claim 1, wherein the substrate has a plurality of interfaces comprising InGaAsP.

15. The method of claim 14, wherein each of the plurality of interfaces is bounded on a first side by a layer comprising GaAs and is bounded on a second side by a layer comprising InGaP.

16. The method of claim 1, wherein the first and second layers are essentially parallel.

17. The method of claim 1, further comprising the step of etching the second layer with a third liquid composition .

18. The method of claim 17, wherein the third composition comprises a mixture of H_3PO_4 and HCl.

19. A method for fabricating a semiconductor device, comprising:

providing a Group III-V compound heterostructure which includes contiguous first and second epitaxial layers having diverse compositions, said first and second layers comprising, respectively, GaAs and InGaP and having disposed between them an interface comprising InGaAsP;

subjecting the heterostructure to a first etchant that selectively etches the first layer; and

subjecting the heterostructure to a second etchant that selectively etches the interface, the second etchant comprising an aqueous solution of H_2O_2 having a pH of less than 7.

20. The method of claim 19, wherein the pH of the second etchant is greater than about 5.

21. The method of claim 19, wherein the second etchant further comprises HCl.

22. The method of claim 21, wherein the mole ratio of H_2O_2 to HCl in the second etchant is within the range of about 1:20 to about 5:4.

23. The method of claim 21, wherein the mole ratio of H_2O_2 to HCl in the second etchant is within the range of about 1:12 to about 3:4.

24. A method for etching a substrate, comprising the steps of:

providing a substrate comprising formations of $In_xGa_{1-x}As_yP_{1-y}$, wherein $0 < x, y < 1$; and

etching the formations with a composition comprising a dilute aqueous solution of H_2O_2 and HCl.

25. The method of claim 24, wherein the mole ratio of H_2O_2 to HCl in the solution is within the range of about 1:20 to about 5:4.

26. The method of claim 24, wherein the mole ratio of H_2O_2 to HCl in the solution is within the range of about 1:12 to about 3:4.

27. The method of claim 24, wherein the mole ratio of H_2O_2 to HCl in the solution is within the range of about 1:12 to about 1:4.

28. The method of claim 25, wherein the concentration of HCl in the solution is less than about 0.5M.

29. A method for fabricating a field effect transistor, comprising the steps of:

providing a substrate comprising a plurality of epitaxial layers containing a first layer of GaAs and a second layer of InGaP, said first and second layer having a common interface comprising InGaAsP; and

etching the interface with a composition comprising an oxidizing agent disposed in a liquid medium.

30. The method of claim 29, wherein the oxidizing agent is a peroxide.

31. The method of claim 30, wherein the peroxide is H_2O_2.

32. The method of claim 29, wherein the liquid medium is water.

33. The method of claim 29, wherein the composition comprises H_2O_2, HCl and H_2O.

34. The method of claim 33, wherein the concentration of HCl in the liquid medium is less than about 0.5M.

35. The method of claim 33, wherein the concentration of HCl in the liquid medium is within the range of about 0.2M to about 0.5M.